

THE PHASE OF COMMERCIAL CRISES .263

merciai crises or financial collapses (confining our survey to the nineteenth century and to the close of Jevons's writings) occurred in 1825, 1836-9 (1837 in the United States), 1847, 1857 and 1866, showing an average interval of $10 \cdot 8$ years, which is closely coincident with the period from maximum to maximum, and minimum to minimum, of the solar spots. And including the crises which appeared in the eighteenth century and in 1804-5, 1815 and 1878 (the latter of which Professor Jevons predicted), he obtained an average period of $10 \cdot 466$ years which virtually accords with Mr Broun's result (the most recent and exact) of $10 \cdot 45$ for the duration of a solar cycle. Now the theory of probability (the sole guide in inquiry and conduct) shows that two periodic phenomena (spots and collapses of trade), varying in virtual coincidence, are causally connected. As Professor Foxwell has remarked, the conclusion which Jevons claimed to have reasonably and scientifically established was that the periodic variations in harvests are associated with the solar period, and that this harvest variation operates in the stimulation and determination of the naturally rhythmic fluctuations of European trade. For, as Jevons himself states, the fluctuations in the money market show a remarkable tendency to recur at intervals approximating very nearly to the range between maxima and maxima and minima and minima of spots. If, he says, the state of the sun governs vintages and harvests, it thereby determines the prices of food and raw materials, and as these constitute the articles with which commerce deals, the condition of the money market is also involved, since the latter depends upon the relation between the supply and demand of those commodities. These (practically) decennial crises depend upon meteorological variations of similar period, and these again depend upon cosmical variations of whose existence we possess evidence in the frequency of spots, of auroras, and magnetic perturbations. It would appear clear that Professor Jevons's conclusion will be converted into a scientific proposition with

further and more exhaustive research—the essential point being that the two cycles of trade (from soundness through inflation to collapse) and of solar commotion are in exact parallelism—both as to course and boundaries—to each other. One or two coin-